

the approach or passage to the eastward of cyclonic areas, whereby masses of air exhibiting large ranges in temperature were drawn into the localities where the fog banks were encountered.

The following are the limits of fog-areas on the north Atlantic Ocean during June, 1887, as reported by shipmasters:

Date.	Vessel.	Entered.			Cleared.		
		Lat. N.	Lon. W.	Time.	Lat. N.	Lon. W.	Time.
1	S. S. Scythia.....	51 48	8 00	.....	51 46	8 15	.....
1	S. S. British Prince.....	40 59	47 22	.....	40 51	47 42	.....
2	S. S. La Normandie.....	42 50	50 05	.....	42 49	52 10	.....
2	S. S. Canada.....	41 06	65 30	.....	40 45	68 00	.....
2	S. S. Ems.....	41 00	65 55	.....	40 30	71 30	.....
2-3	S. S. Amicitia.....	Boston.	.....	.....	70 49	.....	.....
3	S. S. Canada.....	40 54	69 00	.....	40 26	70 00	.....
3	S. S. Umbria.....	41 58	62 00	.....	41 37	64 00	.....
8	S. S. Stockholm City.....	42 35	65 50	.....	Till port.	.....	.....
8	S. S. Pennland.....	40 26	70 40	.....	40 26	72 00	.....
8	S. S. Edith Godden.....	38 41	74 23	.....	Sandy Hook.	.....	.....
8	S. S. State of Indiana.....	Off Shinnecock to	Sandy Hook.	.....	.....	.....	.....
8	S. S. La Normandie.....	42 45	57 30	.....	42 42	61 05	.....
8-9	Brig. Arcot.....	43 28	69 12	.....	44 12	67 41	.....
9	S. S. Hekla.....	41 00	66 30	.....	40 30	71 00	.....
9	S. S. City of Richmond.....	41 03	65 45	.....	41 01	67 19	.....
9	S. S. Scythia.....	42 27	64 15	.....	42 30	66 15	.....
9	S. S. Trave.....	41 09	66 14	.....	40 42	70 44	.....
9	S. S. Ems.....	40 20	64 35	.....	40 03	68 20	.....
9	S. S. Scandinavian.....	42 20	54 02	8 p. m.	42 25	53 22	.....
9-10	Schr. C. B. Church.....	40 08	72 47	.....	41 00	71 30	At inter- vals.
11	S. S. Aurania.....	49 50	20 45	.....	50 40	16 15	.....
12	S. S. Saint Ronans.....	49 27	24 33	.....	42 20	25 00	.....
12	S. S. Letimbro.....	35 00	10 38	.....	35 56	10 50	.....
12	S. S. Wyoming.....	41 50	60 00	.....	41 44	60 40	.....
13	S. S. Sarnia.....	46 32	52 50	.....	48 06	47 51	.....
13	S. S. Rotterdam.....	48 31	16 51	.....	Lasted one hour.	.....	.....
13	S. S. Vaderland.....	39 39	64 05	.....	39 42	63 41	.....
14	S. S. Saale.....	43 40	46 20	.....	42 37	51 26	.....
14	S. S. Rotterdam.....	49 06	13 32	.....	Lasted two hours.	.....	.....
14-15	S. S. Ems.....	49 30	17 45	.....	49 34	17 20	.....
16	S. S. Sarmatian.....	St. Pierre Island; detained	three hours.	.....	.....	.....	.....
17	S. S. Trave.....	43 34	57 03	.....	43 56	55 36	.....
17	S. S. Elbe.....	42 44	45 55	.....	42 41	46 13	.....
17	S. S. Saint Ronans.....	44 03	50 27	.....	43 37	53 00	.....
17	S. S. Main.....	44 59	52 40	.....	44 00	56 21	.....
17	S. S. Devonla.....	43 27	49 46	.....	43 49	52 42	.....
17-18	S. S. Palestine.....	43 55	48 00	.....	42 40	50 10	.....
18	S. S. Elbe.....	42 40	46 04	.....	42 08	50 04	.....
18	S. S. Taormina.....	41 55	46 00	.....	41 00	49 15	.....
18	S. S. Worcester.....	44 30	42 00	.....	43 33	45 05	.....
18-19	S. S. Pennland.....	40 28	72 40	.....	40 09	70 11	.....
18-20	S. S. Saint Ronans.....	40 26	73 51	.....	41 15	62 54	.....
18-20	S. S. Geiser.....	47 12	37 55	.....	43 32	43 11	.....
18-21	S. S. Buffalo.....	44 00	40 15	.....	40 58	55 45	At inter- vals.
18-24	S. S. Denmark.....	43 29	39 42	.....	40 41	69 48	do.

Limits of fog areas—Continued.

Date.	Vessel.	Entered.			Cleared.		
		Lat. N.	Lon. W.	Time.	Lat. N.	Lon. W.	Time.
19	S. S. Trave.....	47 10	44 43	.....	47 50	42 21	.....
19	S. S. De Ruyter.....	48 40	39 00	.....	48 48	38 07	.....
19	S. S. City of Richmond.....	47 47	42 08	.....	47 34	43 38	.....
19-20	S. S. Amicitia.....	40 30	72 00	.....	40 37	68 58	.....
19-21	S. S. Pavonia.....	40 10	70 05	.....	41 53	69 52	.....
19-21	S. S. Pavonia.....	47 00	36 45	6 a. m.	42 13	51 50	9 p. m., at intervals.
20	S. S. City of Richmond.....	40 36	60 02	.....	40 26	59 35	.....
20	S. S. Main.....	38 26	71 27	.....	38 14	71 56	.....
20	S. S. Saint Ronans.....	40 56	68 19	.....	40 31	71 29	.....
20-21	S. S. Elbe.....	40 43	67 06	.....	40 23	71 01	.....
20-22	S. S. Bassano.....	40 00	66 00	.....	40 27	71 48	.....
20	S. S. Devonla.....	40 49	69 19	.....	40 24	73 02	.....
20	S. S. Aurania.....	51 16	12 30	.....	51 04	16 40	.....
20	S. S. Prydian.....	50 21	12 30	.....	50 21	17 50	.....
20	S. S. Italy.....	41 20	47 37	.....	41 24	46 57	.....
21	S. S. Servia.....	41 31	55 39	.....	41 34	55 22	.....
21	S. S. Servia.....	41 39	53 59	.....	41 42	53 22	.....
21	S. S. Elbe.....	40 23	71 26	.....	40 24	73 13	.....
21	S. S. Saint Ronans.....	40 29	71 00	.....	40 27	73 23	.....
21-22	S. S. Palestine.....	42 22	68 30	.....	Boston	.....	.....
21-22	S. S. Austrian.....	42 40	68 00	.....	Boston	.....	.....
22	S. S. Taormina.....	40 54	66 34	.....	40 47	68 04	.....
22	S. S. Aurania.....	49 46	28 47	.....	47 20	38 00	At inter- vals.
22-23	S. S. De Ruyter.....	42 25	63 20	.....	41 38	66 03	.....
23	S. S. Worcester.....	41 24	63 00	.....	41 20	66 00	.....
23	S. S. Amicitia.....	41 52	69 55	.....	40 48	69 24	.....
23-24	S. S. Pavonia.....	42 17	61 58	6 a. m.	Boston	p. m., at intervals	.....
23-24	S. S. State of Alabama.....	43 15	61 20	10 a. m.	42 40	67 40	7 p. m.
23-26	Brig. Arcot.....	44 30	66 59	.....	44 28	67 23	.....
24	S. S. Worcester.....	40 36	66 00	.....	40 26	71 00	.....
24	S. S. Geiser.....	40 56	68 26	.....	40 30	70 08	.....
24	S. S. Gallia.....	40 30	73 21	.....	41 00	67 20	.....
25	S. S. Aurania.....	41 24	64 00	.....	42 42	18 01	At inter- vals.
25	S. S. Scandinavian.....	52 49	16 03	3:30 p. m.	52 42	16 11	.....
25-26	S. S. Gallia.....	40 33	67 47	.....	40 33	66 11	.....
25-26	S. S. Celtic.....	41 44	51 26	8:50 a. m.	41 57	48 55	11:30 p. m.
26	S. S. Scandinavian.....	52 40	18 29	4:30 a. m.	52 35	19 44	.....
26	S. S. Ems.....	49 50	27 10	.....	49 48	27 35	.....
26-27	S. S. Schiedam.....	46 25	45 18	.....	44 45	50 12	.....
27	S. S. Ems.....	49 02	34 02	.....	48 54	35 12	.....
27	S. S. Prydian.....	43 26	47 10	.....	41 56	52 00	.....
27	S. S. Umbria.....	49 53	27 18	.....	49 02	28 38	.....
27	S. S. Circassia.....	52 20	32 49	.....	52 01	34 08	.....
27	S. S. Elder.....	49 51	5 48	.....	49 42	6 56	.....
27-28	S. S. Albano.....	42 30	47 00	.....	41 47	49 00	Noon.
27-28	S. S. Scandinavian.....	51 27	29 12	.....	50 10	35 35	.....
28	S. S. Gallia.....	42 22	48 31	.....	43 00	46 09	.....
29	S. S. Island.....	56 50	21 15	.....	56 02	25 30	.....
30	S. S. Schiedam.....	41 07	67 30	.....	41 06	68 10	.....
30	S. S. Istrian.....	45 00	46 40	7 p. m.	43 26	50 30	9:15 a. m.
30	S. S. Sarnia.....	53 29	49 00	.....	52 57	50 48	.....

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

The distribution of mean temperature over the United States and Canada for June, 1887, is exhibited on chart ii by the dotted isothermal lines. In the table of miscellaneous data are given the monthly mean temperatures, with the departures from the normal, for the various stations of the Signal Service, and the figures opposite the names of the geographical districts in the column for mean temperature, precipitation, and departures from the normal, show respectively the averages for the several districts. The normal for any district may be found by adding the departure to the current mean for the district when the departure is below the normal, and subtracting when above. On chart iv the departures from the normal are illustrated by lines connecting stations of normal or equal abnormal values.

Along the Atlantic and Gulf coasts, in the north Pacific coast region and northern plateau, the mean temperature for June, 1887, is below the normal; the deficiencies in these districts are very slight (generally less than 2°) except in Florida, along the immediate west Gulf coast, and over the northern plateau, where they range from 2° to 4°. Over the southern Rocky Mountain region and the northern districts from Montana, Wyoming, and Colorado eastward to New England, the mean temperatures are above the normal from 2° to 4°.

The following are some of the most marked departures from the normal temperature at Signal Service stations:

Above normal.		Below normal.	
Fort Sully, Dak.....	6.6	Key West, Fla.....	4.7
Fort Apache, Ariz.....	4.9	Sanford, Fla.....	4.4
Fort Bridger, Wyo.....	4.2	Spokane Falls, Wash.....	3.8
Moorhead, Minn.....	4.1	Fort Assinaboline, Mont.....	3.7
Huron, Dak.....	3.9	Rio Grande City, Tex.....	3.6
Bismarck, Dak.....	3.5	Brownsville, Tex.....	3.2
Prescott, Ariz.....	3.5	Boise City, Idaho.....	3.2
Deadwood, Dak.....	3.4	Fort Maginnis, Mont.....	2.7

RANGES OF TEMPERATURE.

The monthly, and the greatest and least daily, ranges of temperature, are given in the table of miscellaneous meteorological data.

The monthly ranges were greatest in the Rocky Mountain regions and upper Missouri valley, where numerous stations report from 60° to 68°, Winnemucca, Nev.; and Phoenix, Ariz., reporting the maximum range, 68°. The Gulf coast stations show the least monthly ranges (generally below 30°), that at Key West, Fla., being the least, 18°, while Galveston, Tex., reports a monthly range of but 19°.

The greatest daily ranges of temperature exceeded 40° over the greater portion of the Rocky Mountain region, and at a majority of the stations occurred from the 16th to 20th. On the Pacific coast, over the central valleys, Lake region, and in the Atlantic coast districts the greatest daily ranges were generally from 20° to 36°, and occurred during the latter half of

the month. At the Gulf stations the greatest daily ranges varied from 14° to 27°.

The least daily ranges over the entire country varied from 4° at stations on the Atlantic, Pacific, and Gulf coasts to 28° in Arizona. In the Lake region, Atlantic coast, and Gulf States, and along the immediate coast of the Pacific, the least daily ranges were generally less than 5°; over the central valleys they varied from 5° to 10°, and west of the one hundredth meridian, except on the Pacific coast, they exceeded 10°.

DEVIATIONS FROM NORMAL TEMPERATURES.

In the table below are given, for certain stations, as reported by voluntary observers, the normal temperatures of June for a series of years, the mean temperature for June, 1887, and the departures from the normal:

Station.	County.	Normal temperature for June.	Number of years.	Mean temperature for June, 1887.	Departure.
<i>Arkansas.</i>		0		0	0
Lead Hill.....	Boone.....	76.9	5	75.3	- 0.6
<i>California.</i>					
Sacramento.....	Sacramento.....	70.4	21	68.8	- 1.6
<i>Connecticut.</i>					
Middletown.....	Middlesex.....	66.0	29	65.6	- 0.4
New Haven.....	New Haven.....	67.0	101	65.5	- 1.5
Thompson.....	Windham.....	65.0	30	64.0	- 1.0
Waterbury.....	New Haven.....	67.4	12	65.5	- 1.9
<i>Illinois.</i>					
Mattoon.....	Coles.....	71.0	7	73.0	+ 2.0
Peoria.....	Peoria.....	73.5	32	77.7	+ 4.2
Riley.....	McHenry.....	66.2	26	69.0	+ 2.8
Sycamore.....	De Kalb.....	67.1	7	69.5	+ 2.4
<i>Indiana.</i>					
Blue Lick.....	Clark.....	71.7	10	73.7	+ 2.0
Connersville.....	Fayette.....	70.5	5	73.9	+ 3.4
Lafayette.....	Tippecanoe.....	70.1	8	72.3	+ 2.2
Logansport.....	Cass.....	73.9	33	75.1	+ 1.2
Summit.....	Ripley.....	73.2	4	74.4	+ 1.2
Vevay.....	Switzerland.....	74.1	21	73.4	- 0.7
Worthington.....	Greene.....	70.4	5	74.4	+ 4.0
<i>Iowa.</i>					
Cresco.....	Howard.....	65.1	10	70.8	+ 5.7
Clinton.....	Clinton.....	68.7	9	72.6	+ 3.9
Monticello.....	Jones.....	68.4	34	72.0	+ 3.6
<i>Kansas.</i>					
Independence.....	Montgomery.....	72.8	16	76.5	+ 1.7
Wellington.....	Sumner.....	73.9	9	76.3	+ 2.4
<i>Maine.</i>					
Belfast.....	Waldo.....	61.2	28	60.2	- 1.0
Corruth.....	York.....	66.3	30	64.6	- 1.7
Gardiner.....	Kennebec.....	63.3	51	62.0	- 1.3
Orono.....	Penobscot.....	62.4	19	62.8	+ 0.4
<i>Maryland.</i>					
Cumberland.....	Alleghany.....	69.5	16	69.6	+ 0.1
Fallston.....	Harford.....	70.2	16	68.6	- 1.6
<i>Massachusetts.</i>					
Amherst.....	Hampshire.....	66.1	50	67.6	+ 1.5
Cambridge.....	Middlesex.....	66.6	65	65.3	- 1.3
Fitchburg.....	Worcester.....	65.6	31	65.3	- 0.3
New Bedford.....	Bristol.....	60.0	75	62.7	+ 2.7
Romerset.....	Bristol.....	69.1	17	68.1	- 1.0
Springfield.....	Hampden.....	68.5	20	68.1	- 0.4
Taunton.....	Bristol.....	68.6	16	64.0	- 4.6
Williamstown.....	Berkshire.....	66.0	34	65.2	- 0.8
<i>Nevada.</i>					
Carson City.....	Ormsby.....	64.9	8	65.4	+ 0.5
<i>New Hampshire.</i>					
Concord.....	Merrimac.....	65.5	19	63.8	- 1.7
Hanover.....	Grafton.....	65.3	28	64.6	- 0.7
<i>New Jersey.</i>					
Dover.....	Morris.....	67.6	5	67.2	- 0.4
South Orange.....	Essex.....	69.4	17	67.1	- 2.3
<i>New York.</i>					
North Volney.....	Oswego.....	64.9	19	65.4	+ 0.5
Palermo.....	Oswego.....	67.7	33	64.8	- 2.9
<i>Ohio.</i>					
Wauseon.....	Fulton.....	68.3	17	69.2	+ 0.9
<i>Pennsylvania.</i>					
Dyberry.....	Wayne.....	64.6	21	66.1	+ 1.5
<i>South Carolina.</i>					
Stateburg.....	Sumter.....	76.3	7	76.2	- 0.1
<i>Texas.</i>					
New Ulm.....	Austin.....	80.5	15	79.2	- 1.3
<i>Vermont.</i>					
Newport.....	Orleans.....	65.3	13	66.0	+ 0.7
Strafford.....	Orange.....	65.0	13	66.2	+ 1.2
<i>Virginia.</i>					
Bird's Nest.....	Northampton.....	74.4	18	70.4	- 4.0
Dale Enterprise.....	Rockingham.....	70.7	7	75.9	+ 5.2
Variety Mills.....	Nelson.....	70.9	10	69.8	- 1.1
Wytheville.....	Wythe.....	68.2	24	68.2	0.0
<i>West Virginia.</i>					
Helvetia.....	Randolph.....	66.1	10	65.8	- 0.3

* From the "Bulletin of the New England Meteorological Society."

The following notes on temperature are furnished by voluntary observers:

Illinois.—Peoria, Peoria Co.: the mean temperature for June, 1887, 77°.

is the highest June mean, with one exception, viz., 79°, in 1873, that has occurred during the last thirty-two years.

Indiana.—Logansport, Cass Co.: during the last thirty-three years the highest maximum temperature for June, 106°, occurred in 1872; the lowest minimum temperature, 43°, in 1885.

Vevay, Switzerland Co.: the highest June maximum temperature during the last twenty-one years, 99°, occurred in 1866 and 1867, respectively; the lowest June minimum temperature for the same period, 46°, in 1878.

Iowa.—Monticello, Jones Co.: during thirty-four years past the highest June maximum temperature, 102°, occurred in 1856 and 1870, and the lowest June minimum temperature, 36°, in 1855 and 1886, respectively.

Kansas.—Wellington, Sumner Co.: the maximum temperature for June, 1887, 99°, is the highest, with one exception, viz., in 1882 (when a similar maximum was recorded), that is shown by the record of nine years' observations; the lowest June minimum temperature in that time, 37°, occurred in 1879.

Maryland.—Cumberland, Alleghany Co.: during the past sixteen years the extreme June temperatures were 93°, in 1874, and 45°, in 1887.

Ohio.—Wauseon, Fulton Co.: in the past seventeen years the highest maximum temperature for June is 99°, in 1874, and the lowest minimum temperature, 34°, in 1883.

South Carolina.—Stateburg, Sumter Co.: the maximum temperature of this month, 99°, is the highest June maximum temperature, with one exception, viz., June, 1881 (which had a similar maximum), that has occurred during the last seventeen years; the lowest minimum temperature for June in that time, 52°, occurred also during the present month.

Texas.—New Ulm, Austin Co.: during the past fifteen years the highest June maximum temperature, 102°, occurred in 1881; the lowest June minimum temperature, 55°, in 1877.

In the following table are given the highest and lowest monthly mean temperatures from July, 1872, to June, 1887, with the monthly normals at New Ulm:

Month.	Highest mean temperature.	Year.	Lowest mean temperature.	Year.	Normal temperature for fifteen years.
	0		0		0
July.....	85.0	1879	80.6	1880	82.7
August.....	84.4	1873	79.4	1879, 1882	82.5
September.....	81.0	1872	75.6	1876	77.6
October.....	73.9	1881	65.8	1873	69.9
November.....	65.6	1879	49.6	1880	59.1
December.....	60.9	1875	46.1	1876	53.9
January.....	63.7	1880	43.2	1881	50.3
February.....	61.9	1882	53.3	1881	56.0
March.....	68.4	1879	58.0	1885	63.0
April.....	71.5	1878	63.6	1874	68.3
May.....	77.4	1879	72.0	1885	74.6
June.....	85.0	1881	79.0	1884	80.5

* Normal for fourteen years only; no monthly means given for December, 1884, and January and February, 1885.

Virginia.—Wytheville, Wythe Co.: the minimum temperature for the present month, 41°, is the lowest June minimum temperature shown by the record of twenty-four years' observations.

FROSTS.

Frosts occurred in the various states and territories during the month as follows:

California.—Fort Bidwell, 6th, 26th.

Dakota.—Fort Totten, 4th, 23d.

Idaho.—Fort Sherman, 26th.

Illinois.—Sycamore, 23d to 25th; Riley, 24th.

Iowa.—Des Moines, 1st, 2d; Independence and Monticello, 24th.

Kentucky.—Midway, 23d.

Maine.—Eastport, 5th.

Massachusetts.—Westborough, 11th.

Minnesota.—Saint Vincent, 4th, 11th, 23d, 24th; during the night of the 3d-4th the temperature fell to 34° and a killing frost occurred; while the wheat crop was but slightly injured considerable damage was done to garden products.

Nebraska.—Genoa, 23d.

Nevada.—Carson City, 3d, 5th to 7th, 10th, 13th.

New Hampshire.—Mount Washington, 11th.

New Jersey.—Salem, 11th.

North Carolina.—Lenoir, 12th, 13th.

Oregon.—Fort Klamath, 1st, 4th, 5th, 8th, 14th, 17th, 26th, 27th; Linkville, 3d to 6th, 26th.

Vermont.—Strafford, 11th.

Virginia.—Dale Enterprise, 12th; Wytheville, 12th, 13th.

Washington Territory.—Olympia, 1st, 2d. The Signal Service observer at Walla Walla states that it was reported that

frost occurred eight miles southeast of that station on the morning of the 27th, causing injury to garden vegetables.

West Virginia.—Mr. S. F. H. Hewit, voluntary observer at Middlebrook, Randolph Co., reports as follows:

Between this place and Valley Head, from two to three miles distant and about six hundred feet lower, there was on June 12th and 13th heavy white frost. Corn was, in places, bitten close to the ground and beans were frozen stiff. I have not yet learned whether any material damage was done or not. On the sea-coast such a frost would have killed the corn and beans. Here it seems that these late frosts simply check, for a time, the growth of corn, when it then takes a new start and finally produces a crop.

Wisconsin.—Fond du Lac, 24th.

Wyoming.—Fort Bridger, 3d, 5th.

ICE.

Ice is reported to have formed during the month at Fort Bidwell, Cal., 5th, and at Carson City, Nev., 6th, 13th.

Table of comparative maximum and minimum temperatures for June.

State or Territory.	Station.	For 1887.		Since establishment of station.			
		Max.	Min.	Max.	Year.	Min.	Year.
Alabama	Mobile	93.3	62.6	100.0	1882	61.0	1879
Do	Montgomery	102.0	61.6	105.5	1881	58.0	1879, 1877
Arizona	Prescott	97.0	35.6	102.0	1878	32.0	1880
Do	Fort Apache	102.0	39.3	101.0	1883	33.3	1885
Arkansas	Fort Smith	94.8	57.1	101.0	1882	50.0	1882
Do	Little Rock	96.0	59.0	98.0	1882	55.0	1882
California	San Francisco	90.0	48.5	95.2	1883	48.0	1871, 1874
Do	San Diego	78.0	54.0	94.0	1877	50.0	1884
Colorado	Denver	95.9	43.7	99.0	1873	37.0	1883
Do	Pike's Peak	55.8	20.6	63.0	1881	2.0	1882
Connecticut	New Haven	90.2	44.2	92.0	1880	41.4	1884
Do	New London	84.5	47.4	89.0	1880	43.0	1876, 1884
Dakota	Fort Buford	98.4	39.4	107.0	1883	30.0	1883
Do	Yankton	93.9	44.7	97.0	1876	38.0	1879
District of Columbia	Washington City	94.7	50.1	102.5	1874	46.5	1873
Florida	Jacksonville	95.1	64.1	100.5	1880	61.7	1884
Do	Key West	87.1	68.6	99.8	1886	71.2	1882
Georgia	Atlanta	97.0	57.1	94.8	1881	54.0	1879
Do	Savannah	99.7	60.0	100.0	1880	58.5	1884
Idaho	Boise City	94.7	37.6	98.6	1885	36.0	1882
Illinois	Chicago	95.7	54.3	96.0	1872	50.0	1877
Do	Chicago	96.4	47.9	98.0	1872	40.0	1875
Indiana	Indianapolis	94.0	49.4	96.0	1874	41.1	1885
Indian Territory	Fort Sill	97.0	60.2	105.0	1881	47.0	1879
Iowa	Dubuque	95.6	45.3	98.0	1874	40.0	1877
Do	Des Moines	93.8	45.0	101.4	1886	43.9	1885
Kansas	Dodge City	101.7	55.0	102.0	1880	40.0	1879
Do	Leavenworth	95.8	51.0	99.0	1875	45.0	1882, 1877
Kentucky	Louisville	96.5	52.6	100.0	1874	49.0	1875
Louisiana	New Orleans	91.2	66.2	97.0	1881	65.0	1879
Do	Shreveport	100.7	66.2	104.0	1875	55.0	1877
Maine	Eastport	74.2	41.6	82.0	1884	30.0	1875
Do	Portland	88.6	43.3	94.0	1878	42.0	1875
Maryland	Baltimore	93.7	51.8	97.5	1874	49.0	1873
Massachusetts	Boston	89.0	47.5	98.0	1874	42.0	1884
Michigan	Marquette	90.7	40.5	95.0	1879	31.0	1881
Do	Grand Haven	84.0	48.1	88.0	1874	39.3	1885
Minnesota	Saint Vincent	92.9	34.2	93.0	1883	29.0	1883
Do	Saint Paul	89.6	48.3	94.0	1874	36.0	1885

Table of comparative maximum and minimum temperatures—Continued.

State or Territory.	Station.	For 1887.		Since establishment of station.			
		Max.	Min.	Max.	Year.	Min.	Year.
Mississippi	Vicksburg	97.3	64.3	101.0	1881	53.0	1879
Missouri	Saint Louis	97.0	57.2	99.0	1881	48.0	1877
Montana	Fort Assinaboine	87.3	36.6	101.0	1883	31.0	1883
Do	Helena	83.4	33.3	95.0	1880	31.0	1880
Nebraska	North Platte	94.0	49.0	101.0	1886	33.0	1876
Do	Omaha	94.0	49.1	98.0	1881	42.0	1877
Nevada	Winnemucca	97.7	29.6	95.0	1881	29.0	1880
New Hampshire	Mount Washington	67.2	33.0	71.0	1878	15.0	1878, 1879
New Jersey	Atlantic City	95.1	53.7	93.0	'74, '80, '81	45.0	1878
New Mexico	Santa Fe	85.5	48.0	92.0	1881	33.0	1880
New York	Buffalo	86.3	51.9	92.0	1878	40.5	1879
Do	New York City	90.1	51.3	95.0	1875	47.0	1878, 1879
North Carolina	Charlotte	101.9	52.8	97.0	1881	51.5	1884
Do	Wilmington	97.9	53.0	100.0	1880	51.0	1884
Ohio	Cincinnati	90.9	52.4	98.5	1874	48.1	1885
Do	Sandusky	91.0	48.9	95.0	1885	45.9	1885
Oregon	Portland	95.3	43.5	99.0	1876	39.0	1875
Do	Roseburg	97.1	38.6	96.5	1878	37.5	1880
Pennsylvania	Pittsburg	93.9	52.2	98.0	1874	39.0	1879
Do	Philadelphia	93.1	53.2	97.0	1874	47.2	1884
Rhode Island	Block Island	80.0	49.2	82.6	1884	46.2	1884
South Carolina	Charleston	99.6	47.4	100.0	1877	58.2	1874
Tennessee	Knoxville	96.0	51.4	96.0	1880	47.0	1878
Do	Memphis	96.6	55.5	100.0	1881	54.0	1879
Texas	Brownsville	91.2	68.5	102.0	1878	63.0	1877
Do	Fort Elliott	94.2	57.3	100.0	1880, 1881	44.0	1880, 1882
Utah	Salt Lake City	97.7	49.3	97.0	1883	37.0	1875
Virginia	Lynchburg	95.5	56.5	102.0	1874	49.0	1880
Do	Norfolk	93.6	38.2	95.4	1883	39.0	1882
Washington Ter.	Spokane Falls	93.2	36.2	95.0	1878	36.0	1880
Do	Olympia	93.1	44.2	98.0	1874	40.0	1876
Wisconsin	La Crosse	92.4	46.7	94.0	1872, 1874	39.8	1885
Do	Milwaukee	90.4	34.0	97.0	1880, 1881	28.0	1876
Wyoming	Cheyenne	90.4	34.0	97.0	1880, 1881	28.0	1876

TEMPERATURE OF WATER.

The following table shows the maximum, minimum, and mean water temperature, as observed at the harbors of the several stations; the monthly range of water temperature; the average depth at which the observations were made, and the mean temperature of the air:

Temperature of water for June, 1887.

Station.	Temperature at bottom.				Mean temperature of the air at station.	Average depth of water, feet and tenths.
	Max.	Min.	Range.	Monthly mean.		
Cedar Keys, Fla.	83.8	77.9	5.9	81.5	78.7	8.3
Eastport, Me.	48.0	42.0	6.0	44.2	54.3	16.2
Galveston, Tex.	87.3	80.0	7.3	82.9	79.9	15.0
Key West, Fla.	87.9	79.9	8.0	83.4	79.3	21.1
New London, Conn.	65.0	54.3	10.7	59.4	64.3	12.1
New York City	71.6	63.1	8.5	67.7	68.2	15.7
Portland, Me.	61.0	49.8	11.2	53.3	61.5	17.5

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for June, 1887, as determined from the reports of about eight hundred stations, is exhibited on chart iii. In the table of miscellaneous meteorological data are given, for each Signal Service station, the total precipitation, with the departures from the normal. The figures opposite the names of the geographical districts in columns for mean temperature, precipitation, and departures from the normal, show respectively the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal, and subtracting when above.

The rainfall of June was very heavy along the Gulf coast, in the lower Rio Grande valley, Florida Peninsula, and in southeastern Georgia; it was also very heavy in the extreme northern portions of Dakota and Montana, and adjacent portion of the British Northwest Territory. In the east Gulf states the excess amounted to two inches, and in the Rio Grande Valley it was nearly nine inches; in the latter district the rainfall was about four times as great as the average for June. In

New England and the middle Atlantic states slightly more than the average amount of rain fell during the month.

In the Lake region and central valleys the rainfall was below the average, the deficiencies being very marked in the upper lake region and the Ohio and upper Mississippi valleys, where there was less than one-half of the average amount of rain.

The following are some of the most marked departures from the normal precipitation at Signal Service stations:

Above normal.		Below normal.	
Inches.		Inches.	
Brownsville, Tex.	10.53	Des Moines, Iowa	4.82
Pensacola, Fla.	8.42	Memphis, Tenn.	4.21
Fort Assinaboine, Mont.	7.35	Dubuque, Iowa	3.99
Rio Grande City, Tex.	6.80	Grand Haven, Mich.	3.92
Southport, N. C.	6.43	Keokuk, Iowa	3.88
New Orleans, La.	5.10	La Crosse, Wis.	3.56
Key West, Fla.	4.26	Milwaukee, Wis.	3.31
Jacksonville, Fla.	3.99	Springfield, Ill.	3.06

In the table below is given the total precipitation for the